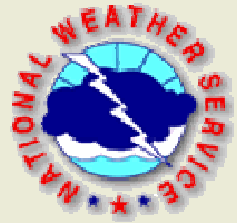




Coyote Crier

SKYWARN Newsletter Serving Weather Spotters Across Southeast Arizona



National Weather Service Tucson, AZ

Autumn 2014

Volume 1, Issue 1

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National Weather Service Tucson Gets a New Meteorologist-In-Charge

Here at NWS Tucson we are excited to introduce our new Meteorologist-In-Charge, Mike Cantin. He replaced our former MIC, Glen Sampson, when he retired in May after 35 years of government service. Glen was the MIC since December 1997 and will continue to make Tucson his home. Glen plans to teach a weather course at Pima Community College in the near future. Below, Mike tells his story.

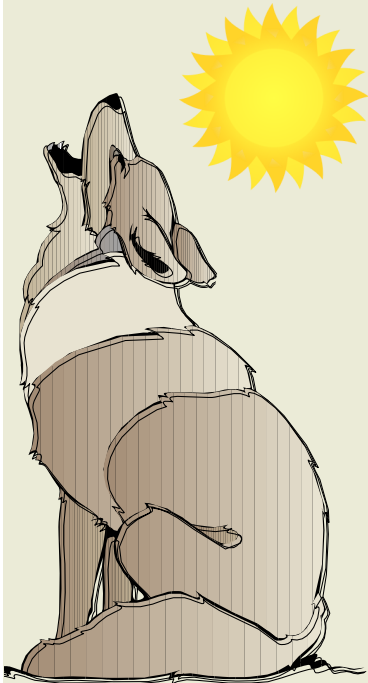
Hi everyone, my name is Mike Cantin, the new Meteorologist in Charge at the National Weather Service Forecast Office in Tucson, AZ. My family and I arrived in SE Arizona back in July, right in the middle of the active monsoon. In fact, as we drove into town we had to make two u-turns to avoid flooded roads. Talk about an introduction!

Before coming to Tucson I have spent my career in the NWS in various locations. I was a forecaster in Pendleton, OR...Pocatello, ID...and Tampa, FL. Next, I was a Warning Coordina-

tion Meteorologist in Caribou, ME...and Honolulu, HI. Prior to my time with the NWS I spent a little over 2 years as a broadcast meteorologist on TV stations in Wyoming and Idaho. As you can see from the hat in my picture, I earned my Meteorology degree at the University of Utah in Salt Lake City. Go Utes!

I grew up in the rural forest of southern New Hampshire and became interested in weather at an early age after experiencing hurricanes Gloria and Bob...and after digging out from a multitude of huge snowstorms.

This isn't my first experience with Arizona, as I've spent several camping/hiking trips over the years enjoying the amazing scenery of this great state. I have a passion for the outdoors... hiking, cycling, and surfing (where's the ocean?), but most of all I enjoy spending time with my wife and four children. I look forward to being a part of the tremendous service provided by our office, and hope to help keep you safe no matter what the weather throws at us. Take care, and have a wonderful day.



2014/15 Winter Season Outlook

J.J. Brost, Science and Operations Officer

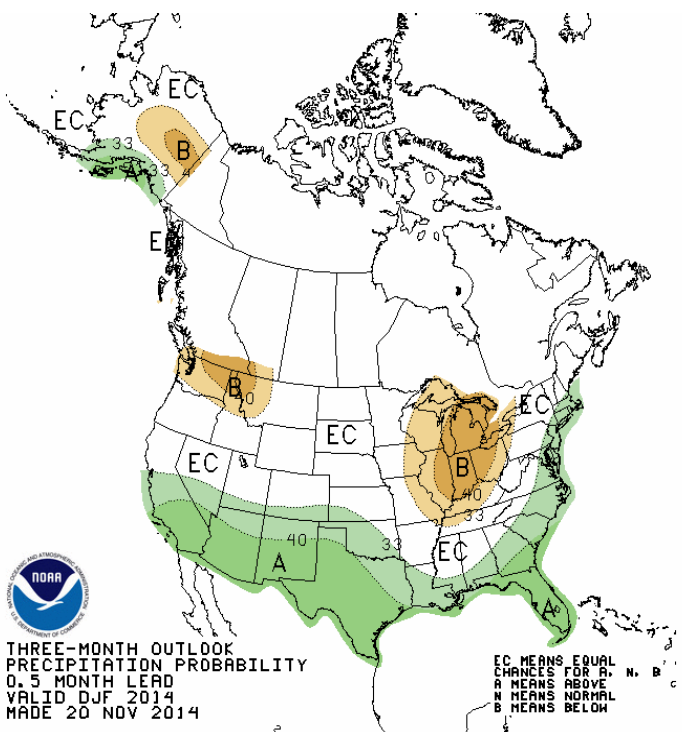
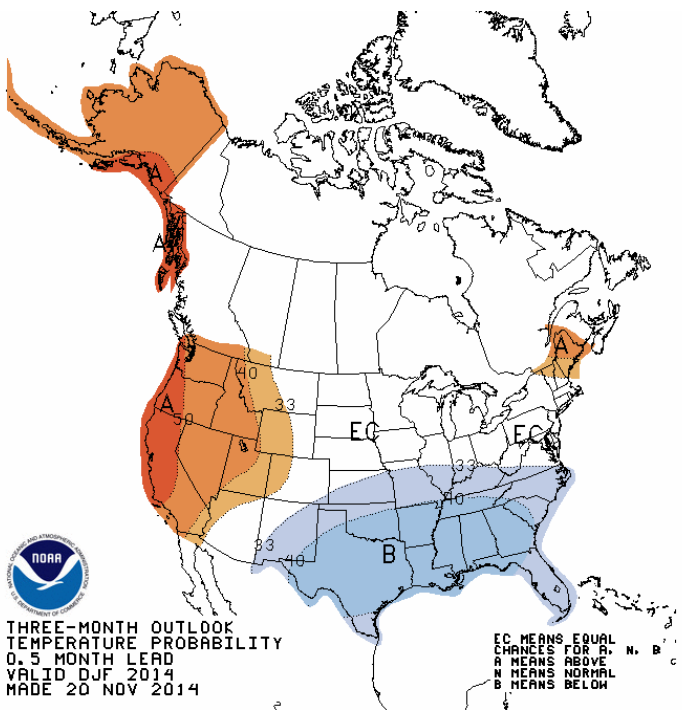
The summer monsoon is now the rearview mirror. As it turned out, Arizona ended up with a wetter than normal monsoon when averaged over the entire state. Of course there were some areas that ended up on the dry side. Three tropical systems (Norbert, Odile and Simon) helped bring widespread rain across the state. So now the big question is, "can Arizona see a wet winter

right) for December, January and February. This map can be hard to interpret. What it shows for Arizona is that there are no strong signals indicating either warmer or colder than normal conditions. We call that an "Equal Chances" or "EC" forecast and it appears as the white area on the map above. Now, the far western portion of Arizona does show a slightly higher chance of being warmer than normal. I want to be clear that this forecast is not suggesting "normal" or "average" temperatures this winter. The "EC" forecast just implies a lack of confidence in the forecast.

Now for precipitation, here is the outlook for December, January and February at the bottom right:

This map implies higher confidence in Arizona receiving above average rainfall this winter. As it turns out,

this forecast matches what we normally expect during an El Niño.



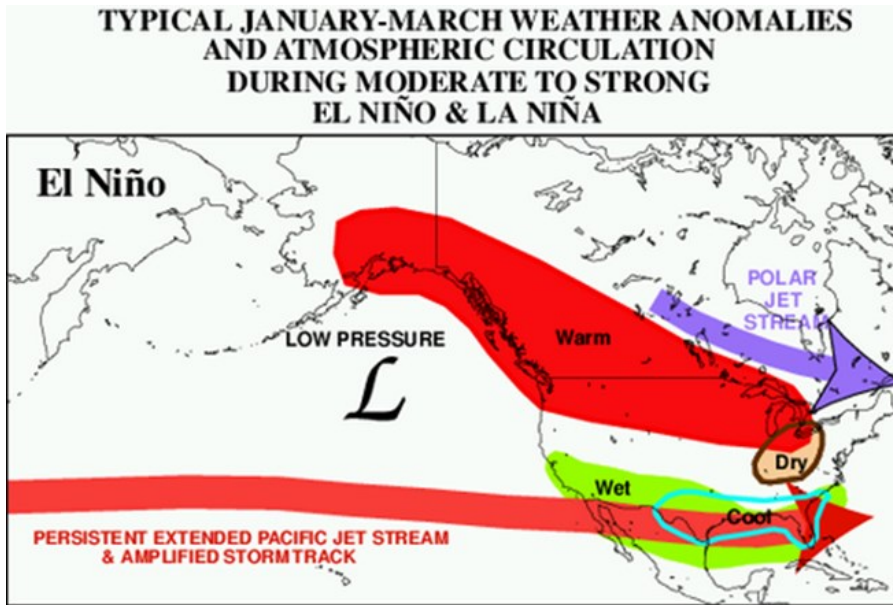
*"Can Arizona see a
wet winter to follow our
wet monsoon?"*

to follow our wet monsoon?" Well, the following information will try to shed light on the winter outlook.

The Climate Prediction Center issues the official longer range forecasts for the United States. Let's start with the temperature outlook. The official forecast (issued November 20, 2014; top

2014/15 Winter Season Outlook

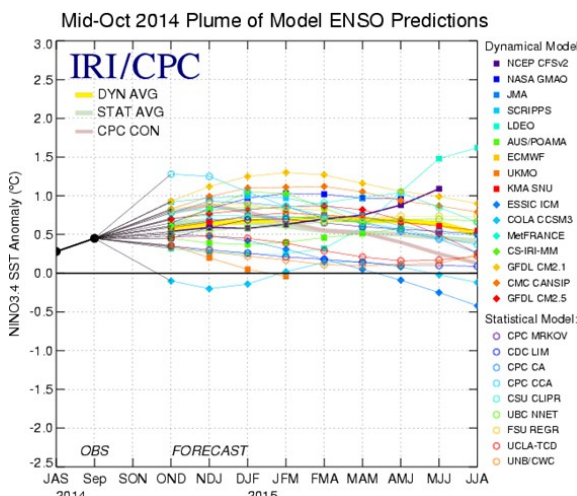
J.J. Brost, Science and Operations Officer



In fact, this map to the left shows the precipitation patterns during a typical El Niño winter:

If you read the title of this graph, you might catch a very important phrase. The graph shows precipitation patterns during “Moderate to Strong El Niño” patterns. So the question is, “are we expecting a moderate to strong El Niño?”

This graph below is very noisy. I’m sorry about that. I want you to focus on the yellow line in this spaghetti diagram. The yellow line represents the average of all the forecasts which predict El Niño. Just as a reminder, in order to be classified as an El Niño year, the sea surface temperatures in the Pacific Ocean along the equator need to be 0.5 degree above average. A moderate El Niño begins when the ocean temperatures exceed 1 degree above normal, and a strong El Niño occurs when we exceed 1.5 degrees above normal



In this case, the yellow line (or average of all the predictions) is hovering right at 0.5 degrees above normal (it’s called an anomaly on this graph). So, that means, at BEST, the forecast suggests a weak El Niño with only a few predictions hinting at a moderate El Niño.

Now, the Climate Prediction Center relies on more than just the state of El Niño when making their forecast. They also use climate

models that help provide additional guidance for their forecasts. When they combine the model forecasts and these various current climate signals (like El Niño), they decided to increase the chances for a wet winter for Arizona.

I should point out that the numerical value of the forecast calls for a 40% chance of being wetter than average across Arizona. That also means there is a 60% chance Arizona will either receive average, or even below average rainfall this winter.

There you go – clear as mud. Actually, this is a good sign if you are hoping for a wet winter. If you recall, the last few winters have been on the dry side and the predictions from the Climate Prediction Center often called for drier winters. So this is a step in the right direction.

With any luck, we will see enough rainfall or snowfall to help replenish our reservoirs without providing the negative impacts of rain and snow. As an example, heavy rain and snow often brings car accidents due to slick roads, or they can promote mold growth on crops leading to negative impacts on the agriculture community.

For more information on the winter outlook, go to cpc.ncep.noaa.gov

*“the forecast calls for a
40% chance of being
wetter than average across
Arizona”*



Monsoon 2014 Recap Emily French, Meteorologist Intern & Storm Data Focal Point

Monsoon 2014 featured an unusual occurrence from late August through early October, consisting of significant moisture surges from four tropical systems. Here is some of the information regarding those events.

Marie

Named: 8/22/2014

Maximum Strength: Category 5 with max sustained winds of 160 mph on 8/23/2014.

Summary: Marie was a very strong Eastern Pacific hurricane which thankfully stayed well to the south and west of any major landmasses. As she gradually moved north-west in her lifetime, the upper level pattern allowed deep moisture to be pulled northward up into southern Arizona. This moisture combined with our normal monsoon pattern resulted in very heavy rainfall and flash flooding in some locations on 8/25/2014 & 8/26/2014. On the 25th, the majority of rain fell in Pima, Santa Cruz, and extreme western Cochise County. On the 26th, rainfall was much more widespread across all of southeastern Arizona. In Tucson, flash flooding peaked on the 26th in several parts of the metro, including a swift water rescue at Fort Lowell and Tucson Blvd. Rainfall amounts of up to 2" were reported, with some rainfall rates well in excess of 1" per hour. Heavy rain also affected the Sierra Vista area, where streets and low water crossings were flooded out, causing them to be impassable. Rainfall amounts of up to 1.5" were reported from Sierra Vista to Nicksville.



Remnants of Norbert Sept 8, 2014 Crest of Santa Cruz River at Congress Street (13,400 cfs)

Norbert

Named: 9/2/2014

Maximum Strength: Category 3 with max sustained winds of 120 mph on 9/6/2014.

Summary: Norbert impacted Arizona as remnant moisture, with heavy rain and flash flooding occurring mainly on 9/8/2014. In preparation, a Flash Flood Watch had been issued for most of Southeastern Arizona to highlight the potential for flash flooding. Norbert was a particularly extreme event for the Phoenix area, where a 24-hour record 3.30" of rain fell at Sky Harbor Airport in conjunction with widespread severe flash flooding. Closer to home, up to 2.5"-4.5" of rain fell near the western edge of the Catalina Mountains and Catalina Foothills, north through Oro Valley and up into Oracle. Tucson International Airport broke their rainfall record for Sept 8 with 1.84", breaking the previous record of 0.94" set in 1919. Numerous swift water rescues occurred in response to widespread flash flooding in the Tucson area, with regrettably, 2 fatalities. Some of the large stem rivers and washes experienced high flows, including the Rillito River, Cañada del Oro Wash, and Santa Cruz River.

Odile

Named: 9/10/2014

Maximum Strength: Category 4 with max sustained winds of 135 mph on 9/14/2014.

Summary: Odile affected Arizona first as a Tropical Depression as it moved northeastward out of the Gulf of California and into Southeast Arizona before weakening to a remnant low. Forecast models in advance of Odile's landfall placed very heavy rainfall from Tucson and to the south. However, Odile took a sharp turn toward the east as it crossed the International border, centering the heaviest rainfall across Santa Cruz and Cochise Counties on 9/17/2014. Rainfall estimates from KEMX radar ranged from 1"-3", especially in the Nogales area where Ephraim Wash overtopped and flooded two homes on Western Avenue. Additional heavy rainfall in Sonora, Mexico resulted in high flows in Nogales Wash, although it remained within its banks. With 4"-6" of rainfall accumulation in Mexico, the San Pedro River experienced significant high flows which eventually impacted Highway 92 at the Palominas Bridge and Hereford Road, closing both roadways for a period of time. By 9/20/2014, the San Pedro River came out of its banks much farther north in Mammoth, flooding several homes and forcing numerous evacuations. Thankfully, there were no injuries.

Simon

Named: 10/2/2014

Maximum Strength: Category 4 with maximum sustained winds of 135 mph on 10/5/2014.

Summary: The moisture surge associated with Simon began on the evening of 10/7/2014 with showers and thunderstorms over mainly Pima, Santa Cruz and southern Cochise Counties, while the center of circulation remained quite far off to the southwest of the state. As Simon neared Arizona, a second round of showers occurred during the overnight hours of the 7th and into the early morning of the 8th. After a brief reprieve during the mid-morning, the final round of rainfall moved from west to east during the afternoon of the 8th with Pima County feeling most of Simon's effects. Rainfall rates of over 1" per hour resulted in flash flooding with one car getting caught in the rapidly flowing waters of Arcadia Wash in Tucson. Storm total rainfall measurements included 1.28" at Nogales Airport, 1.03" at Tucson International Airport, 1.36" at Douglas Airport, 1.77" at Calabasas (Santa Cruz County), and 1.70" near Three Points. Storm total precipitation amounts placed the heaviest rainfall amounts over western Pima County near Ajo and Why, where accumulations of 2.5" to 4+" were estimated by radar. Road closures during Simon included Highway 86 near San Simon Wash, Route 15 near North Komelik, and Route 21 at Santa Cruz, all located on the Tohono O'Odham Nation. Significant flows were also observed on the Vamori Wash at Kom Vo, and the San Simon Wash at Pisinemo.

Monsoon 2014 Recap Emily French, Meteorologist Intern & Storm Data Focal Point

Funnel Clouds and Tornadoes

Multiple instances of funnel clouds occurred during Monsoon 2014, in addition to one tornado. Thanks to technology and cell phones, these phenomena, although rare in Southeastern Arizona, are being captured by photo and video much more often than in the past. A landspout tornado occurred just northwest of Willcox on August 15, and was well documented by Roger Hill who was running a lightning workshop. It was on the ground for a total of 6 minutes early in the afternoon, with the vortex clearly connected from cloud base to the ground. Thankfully, we received no reports of injuries or damage. One weak funnel cloud occurred near Babocomari Ranch on August 20. Another, more defined funnel cloud was photographed on September 26 near Patagonia. Other funnel clouds were observed earlier on in the summer, but they formed on the Mexican side of the International Border and did not affect Arizona.



Patagonia Funnel Cloud
Sept 26, 2014



Willcox Landspout Tornado
Aug 15, 2014

Fatalities

Unfortunately, we did have weather-related fatalities this year. 2 fatalities were reported in Tucson due to flash flooding which occurred due to the remnants of Norbert. One occurred in the Alamo Wash, while the other happened in the Cadillac Wash. There were also 2 fatalities which occurred due to lightning strikes, one in Sells and one in Sonoita. Lastly, 1 heat-related fatality occurred on October 22 in Tucson.

2014 Monsoon Rainfall Totals John Glueck, Senior Forecaster and Climate Focal Point

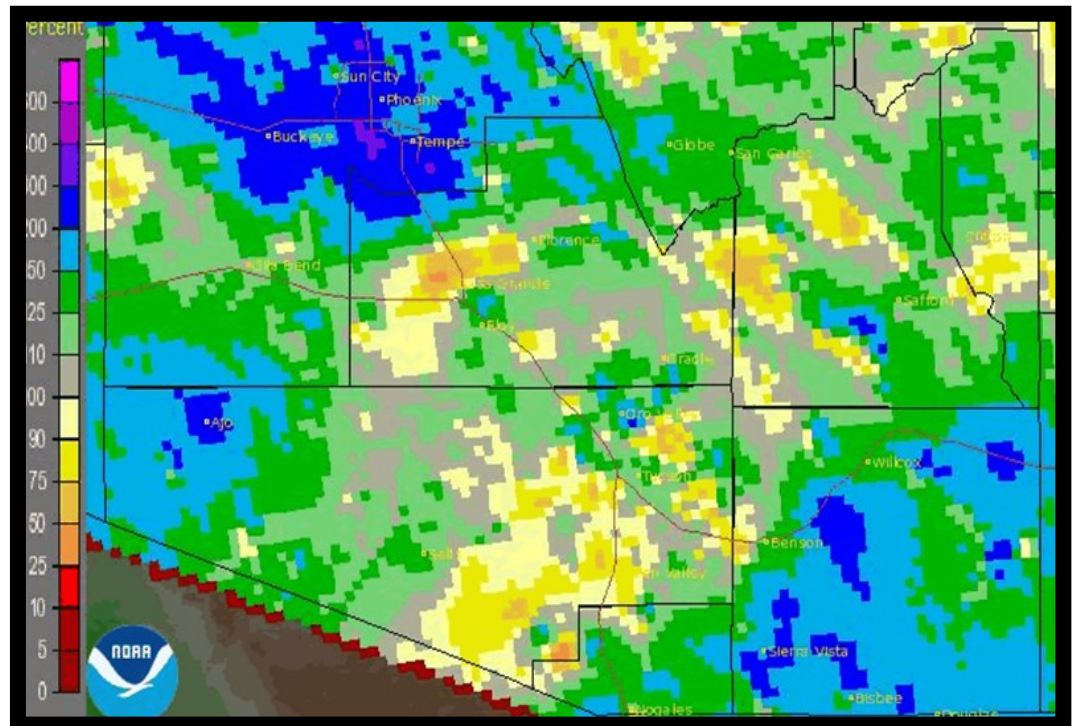


"Rainfall winners were most of Cochise county and western Pima county."

The 2014 Monsoon started near the average date, July 3rd, and was very active during the first couple of weeks. The thunderstorm season became a bit more

erratic with periods of dry and active periods. September will be remembered for two tropical storms, Norbert and Odile, making its impact across southeast Arizo-

na. The map below shows the percentage (%) of normal rainfall for the 2014 Monsoon. Winners were most of Cochise county and western Pima county.



Green/Blue = Wetter than normal; Yellow/Red = Drier than normal

2014 Monsoon rainfall totals for select locations across Southeast Arizona

Coronado National Memorial	19.97"	Duncan	10.20"
Bisbee	19.59"	Willcox	9.48"
Arivaca	17.86"	McNeal	9.21"
Sierra Vista	16.69"	San Simon	8.13"
Tombstone	14.40"	Oracle State Park	7.81"
Chiricahua National Monument	14.04"	Ajo	7.17"
Nogales	13.83"	Tucson International Airport	6.08"
Patagonia	12.81"	Fort Thomas	5.52"
Douglas	12.33"	Kearny	4.72"
Kitt Peak	11.63"	Organ Pipe National Monument	4.70"
Cascabel	10.27"	Safford Ag	4.29"

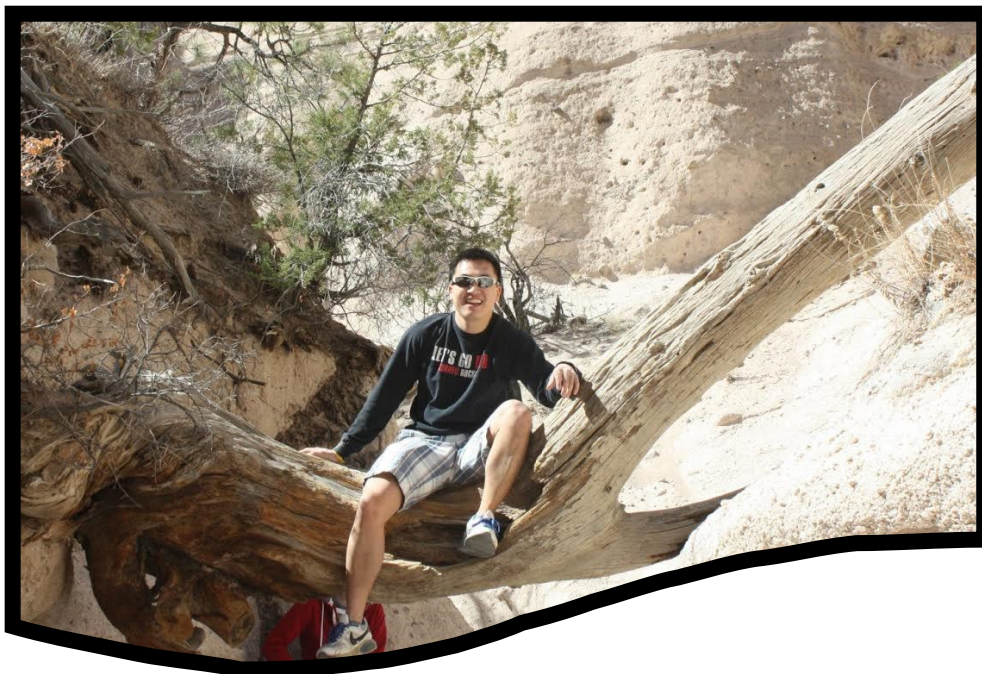
Another New Employee at NWS Tucson

Our second new employee is Lee Carlaw, Meteorologist Intern. Below he tells us a little about himself. Welcome to Tucson, Lee!

I grew up just outside Washington, D.C where I experienced everything from winter snowstorms to severe weather and hurricanes. I remember getting a chalk board as a birthday gift when I was a kid and spending hours drawing up my idea of the "air patterns" that were causing the weather on a given day. In January of 1996, our house was buried under about 2 feet of snow during the now (in)famous Blizzard of '96, and this is what sealed my fate as a meteorologist: I knew I wanted to study the weather.

In pursuit of this dream, I attended Cornell University in Ithaca, New York where I received my B.S. degree in Atmospheric Sciences. I went on to the University of Oklahoma where I studied numerical data assimilation, which involves incorporating weather observations and atmospheric data into computer models, and received my Master's of Science in Meteorology. Now, I find myself in a new corner of the United States experiencing a host of different and intriguing forecast challenges (we don't get much in the way of dust, 100+ degree days, or a monsoon on the East Coast).

When I don't have my face buried in weather maps, I enjoy hiking, playing golf, or jamming to Eric Clapton on guitar. I'm incredibly excited to start my National Weather Service career at the Tucson forecast office and look forward to whatever the future holds in store!



*"I'm incredibly excited
to start my National
Weather Service career
at the Tucson forecast
office."*

Please keep your personal information up-to-date. Do we have your correct mailing address, location, phone number and e-mail address? If not, please update us so that our database is as current as possible. The best way to update your information is by e-mail, or to call and speak with Greg Mollere. Thanks!

GREG.MOLLERE@NOAA.GOV



95th Annual Meeting of the American Meteorological Society January 4-8, 2015 Phoenix, Arizona



The 95th Annual Meeting of the American Meteorological Society will be held January 4th through the 8th 2015. On Sunday January 4, 2015 AMS WeatherFest will occur between Noon and 4 pm MST. The location for WeatherFest is at the

Phoenix Convention Center, 100 N. Third St. Phoenix, Arizona 85004. This event is free to the entire family. WeatherFest is an interactive sci-end and weather fair for weather enthusiasts of all ages. There will be weather related shows

and demonstrations with over 70 exhibit booths with games, giveaways and more. For more information about the convention and WeatherFest go to:

annual.ametsoc.org/2015

*"There will be weather
related shows and
demonstrations with over
70 exhibit booths"*



NWS Tucson Office Staff and Contact Information

National Weather Service Tucson Office Staff

Meteorologist in Charge.....Mike Cantin

Administrative Support Assistant.....Leslie Cole

Warning Coordination Meteorologist.....Kenneth Drozd

Science and Operations Officer.....John Brost

Service Hydrologist.....Erin Boyle

Electronic Systems Analyst.....Chris Carney

IT Specialist.....Evelyn Bersack

Electronic Technicians.....Rick Leupold, Keith Sapp

Senior Forecasters.....Jeff Davis, Brian Francis, John Glueck, Jim Meyer, Greg Mollere

General Forecasters.....Glenn Lader, Chris Rasmussen, Carl Cerniglia, Jerald Meadows, Gary Zell

Meteorologist Interns.....Emily French, Ricardo Humphreys, Lee Carlaw

Observation Program Leader.....Mic Sherwood



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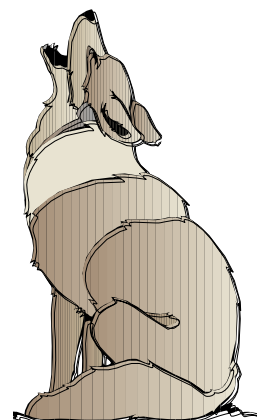
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Be looking for the Spring Edition of the Coyote Crier sometime during late March or early April of 2015. In that edition we will publish the locations, times and dates of the Spotter Training sessions. If it has been a few years since you attended a spotter training class, we recommend that you clear a space on your calendar next spring to attend one of these informative sessions.

Greg Mollere, Senior Forecaster, Spotter Training Coordinator & Coyote Crier Editor

What You As A Skywarn Spotter Should Report??

Tornado: A Tornado or a funnel cloud

Heavy Rain: A Half Inch or more in less than an hour

Hail: Quarter size hail (one inch) or larger

High Wind: Estimated or measured 45 mph or greater

Flooding: Any Kind of Flooding

Snow: One inch or more (2 inches if above 5000 feet)

Visibility: Less than one mile

Death/ Injury: Any weather related reason

Damage: Any weather related reason

(520) 670-5162 or 1-800-238-3747

Happy Holidays!!!



All of us at the National Weather Service in Tucson want to express our gratitude for having you be part of our team during severe weather this past monsoon. We appreciate all of those phone calls and on-line reports notifying us of what kind of weather you were experiencing in your neck of the woods. We also want to wish all of you a happy holiday season!

